

**General Certificate of Secondary Education**

**B232**

**Manufacturing**

Manufacturing Processes

**Specimen Paper**

Time: 1 hour

Candidates answer on the question paper.

**Additional materials:**

Candidate  
Forename

Candidate  
Surname

Centre  
Number

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Candidate  
Number

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## INSTRUCTIONS TO CANDIDATES

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each answer carefully and make sure you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do not write in the bar codes.
- Do not write outside the box bordering each page.
- Write your answer to each question in the space provided.

## INFORMATION FOR CANDIDATES

- The number of marks for each question is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is 60.

For Examiner's Use Only	
1	
2	
3	
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9	
10	
11	
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13	
14	
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16	

This document consists of **9** printed pages and **3** blank pages.

**[Turn over**

Answer **all** questions.

1 For each product listed below select the correct sector.

**SECTORS**

Chemical and Pharmaceutical:
Clothing and Textiles
Electrical and IT
Food and Drink
Furniture
Machinery and Equipment
Packaging

Product:

Mobile phone.....

Biofuel.....

Burger packaging.....

Corporate wear.....

Lawnmower.....

Mirror.....

Sports drink.....

[7]

- 2 Complete the box below ('Manufacturing stages in correct order') by selecting the stages of manufacture in the correct order from the bulleted list.

Stages of Manufacture:

- Material supply and control
- Processing and production
- Finishing
- Packaging
- Despatch

Manufacturing stages in correct order
Production planning
Assembly

[5]

3 Describe **two** ways to protect production workers from injury when manufacturing products.

1.....  
.....  
.....[2]

2.....  
.....  
.....[2]

4 State what the letters **CAD** stand for.

C..... A..... D.....[1]

5 Describe **two** benefits to a company of using CAD when **designing** engineered products.

Benefit 1.....  
.....  
.....[2]

Benefit 2.....  
.....  
.....[2]

6 Tick a product.

- ☐ Mobile phone
- ☐ Biofuel
- ☐ Burger packaging
- ☐ Corporate wear
- ☐ Lawnmower
- ☐ Mirror
- ☐ Sports drink

For the selected product name the main **material** from which it is made:

**Material** ..... [1]

For the selected product name the main **form** in which the material is supplied:

**Form** ..... [1]

7 Give **two** ways you could research existing products to find out about manufacturing processes used.

1 .....  
 .....  
 ..... [2]

2 .....  
 .....  
 ..... [2]

[Turn over

8 Describe **two** ways ICT is used for communication when **designing** an engineered product.

1.....  
.....  
.....[2]

2.....  
.....  
.....[2]

9 Name a product you have produced and describe **two** quality checks carried out when making the product.

Product:.....

Quality check 1.....  
.....  
.....[2]

Quality check 2.....  
.....  
.....[2]

**10** Describe **two** ways ICT is used to ensure quality in manufactured products.

1.....  
.....  
.....[2]

2.....  
.....  
.....[2]

**11** Explain why a prototype might not be made of the same material as the final product.

.....  
.....  
.....  
.....[3]

**12** Tick the **two** personal qualities that are most desirable in a good team member.

- ☐ Healthy
- ☐ Clever
- ☐ Good communicator
- ☐ Independent worker
- ☐ Supportive

[2]

[Turn over

- 13 (a)** Explain the importance of allocating appropriate team roles and responsibilities when manufacturing a product.

.....

.....

.....[2]

- (b)** Explain the importance of setting and agreeing individual and team targets when manufacturing a product.

.....

.....

.....[2]

- 14** The table shows a comparison of six components that could be used in a manufactured product.

Component	Ease of storage	Easy to use	Safe to use	Value for money	Readily available
<b>A</b>	8	1	9	9	9
<b>B</b>	5	6	5	5	4
<b>C</b>	8	2	1	2	3
<b>D</b>	2	9	1	2	2
<b>E</b>	3	8	6	3	5
<b>F</b>	9	5	3	9	2

10 = excellent 1 = very poor

- (a)** State which component is the most readily available. [1]

.....[1]

- (b)** Explain why component E would be the best choice for the workforce.

.....

.....

.....[2]



- 15** Explain how the information in the table could be used to identify the best of the six components to use in the product.

.....

.....

.....

.....[3]

- 16** Please note that the instruction 'discuss' means that you should:

- identify **three** relevant issues/points raised by the question;
- explain why you consider **two** of these issues to be relevant;
- use **one** specific example or piece of evidence to support your answer.

Discuss the impact of modern technology on the local environment.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....[6]

**Total Marks: [60]**

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SPECIMEN

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SPECIMEN

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SPECIMEN

The maximum mark for this paper is 60.

SPECIMEN

Question Number	Answer	Max Mark							
1	<p>For each product listed below select the correct sector.</p> <p style="text-align: center;"><b>SECTORS</b></p> <table><tr><td>Chemical and Pharmaceutical:</td></tr><tr><td>Clothing and Textiles</td></tr><tr><td>Electrical and IT</td></tr><tr><td>Food and Drink</td></tr><tr><td>Furniture</td></tr><tr><td>Machinery and Equipment</td></tr><tr><td>Packaging</td></tr></table> <p>Chemical and Pharmaceutical:     biofuel</p> <p>Clothing and textiles     Corporate wear</p> <p>Electrical and IT     Mobile phone</p> <p>Food and drink     Sports drink</p> <p>Furniture     Mirror</p> <p>Machinery and Equipment     Lawnmower</p> <p>Packaging     Burger packaging</p>	Chemical and Pharmaceutical:	Clothing and Textiles	Electrical and IT	Food and Drink	Furniture	Machinery and Equipment	Packaging	[7]
Chemical and Pharmaceutical:									
Clothing and Textiles									
Electrical and IT									
Food and Drink									
Furniture									
Machinery and Equipment									
Packaging									

Question Number	Answer	Max Mark
2	<p>Complete the box below ('Manufacturing stages in correct order') by selecting the stages of manufacture in the correct order from the bulleted list.</p> <p><b>Stages of Manufacture:</b></p> <ul style="list-style-type: none"> <li>• Material supply and control</li> <li>• Processing and production</li> <li>• Finishing</li> <li>• Packaging</li> <li>• Despatch</li> </ul> <p>1 mark for each of 5 items correctly placed</p> <p><b>Production planning (answer given)</b></p> <p>Material supply and control</p> <p>Processing and production</p> <p><b>Assembly (answer given)</b></p> <p>Finishing</p> <p>Packaging</p> <p>Despatch</p>	[5]

Question Number	Answer	Max Mark
3	<p><b>Describe <u>two</u> ways to protect production workers from injury when manufacturing products.</b></p> <p>2 marks for each of 2 ways given(1), with expansion(1), for example:            Personal protective Equipment (PPE) to protect from hot ovens/platens/welding torches/sharp edges/etc            Identify hazards, by painting bright yellow/adding striped tape/ standard signage            Identify hazards, such as sharp edges/hot surfaces            Machine guards, to protect from (as above)            Training, so that safe practice is normal/ aware of potential hazards            Good housekeeping, to prevent accidents/ hazards such as swarf build up/ tools left lying around where they could fall and injure someone/ be a tripping hazard.</p>	[4]
4	<p><b>State what the letters CAD stand for.</b></p> <p>C..... A..... D.....</p> <p>One mark for Computer Aided Design</p>	[1]



Question Number	Answer	Max Mark
5	<p><b>Describe <u>two</u> benefits to a company of using CAD when designing engineered products.</b></p> <p>Two marks for each of two benefits described, for example a feature and why or how it is beneficial to a company:</p> <p>Designs can be sent electronically saving time and postage. Designs can be amended without redrawing, saving time. 2D drawings can be viewed as 3D objects, stress/load calculations can be carried out automatically/optimize design so less material needed.</p>	<b>[4]</b>

Question Number	Answer	Max Mark
6	<p><b>Tick a product.</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Mobile phone</li> <li><input type="checkbox"/> Biofuel</li> <li><input type="checkbox"/> Burger packaging</li> <li><input type="checkbox"/> Corporate wear</li> <li><input type="checkbox"/> Lawnmower</li> <li><input type="checkbox"/> Mirror</li> <li><input type="checkbox"/> Sports drink</li> </ul> <p><b>For the selected product name the main material from which it is made:</b></p> <p><b>For the selected product name the main form in which the material is supplied:</b></p> <p>No marks for the product identified.  For <u>that</u> product:  One mark for correct material  One mark for supplied form:</p> <p>Biofuels:</p> <ul style="list-style-type: none"> <li>• sugar cane/plant oil <ul style="list-style-type: none"> <li>○ stems/liquid</li> </ul> </li> </ul> <p>Corporate wear:</p> <ul style="list-style-type: none"> <li>• polyester/poly cotton/acrylic <ul style="list-style-type: none"> <li>○ roll/yarn</li> </ul> </li> </ul> <p>Mobile phone:</p> <ul style="list-style-type: none"> <li>• ABS/PC or PC-ABS (Acrylonitrile Butadiene Styrene/Polycarbonate Alloy) <ul style="list-style-type: none"> <li>○ granules</li> </ul> </li> </ul> <p>sports drink:</p> <ul style="list-style-type: none"> <li>• water <ul style="list-style-type: none"> <li>○ liquid or mains</li> </ul> </li> </ul> <p>Mirror:</p> <ul style="list-style-type: none"> <li>• glass <ul style="list-style-type: none"> <li>○ sheet</li> </ul> </li> </ul> <p>Lawnmower:</p> <ul style="list-style-type: none"> <li>• ABS <ul style="list-style-type: none"> <li>○ granules</li> </ul> </li> </ul> <p>Burger packaging:</p> <ul style="list-style-type: none"> <li>• polystyrene/recycled card <ul style="list-style-type: none"> <li>○ sheet</li> </ul> </li> </ul>	[2]

Question Number	Answer	Max Mark
7	<p><b>Give <u>two</u> ways you could research existing products to find out about manufacturing processes used.</b></p> <p>Two marks for each of two methods described (how and what):            Eg looked for injection mould marks            Emailed company asking ..            Watched video showing....            Had a visiting speaker who said.....</p>	[4]
8	<p><b>Describe <u>two</u> ways ICT is used for communication when designing an engineered product.</b></p> <p>Two marks for each of two descriptions giving the ICT used and how or for what, for example:            Presentation package to show design ideas to client            Spreadsheet to calculate loadings/costs/toatal weight            Word processor to write for details of.....            Email to write for.../ to attach CAD files /etc to send to....            Mobile phone to check with site surveyors.</p>	[4]

Question Number	Answer	Max Mark
9	<p><b>Name a product you have produced and describe <u>two</u> quality checks carried out when making the product.</b></p> <p>Two marks for each of two descriptions of a quality check carried out. What (1) and how(1). For example visual check that finish is glossy, manual for smoothness, using go-nogo gauge.</p>	[4]
10	<p><b>Describe <u>two</u> ways ICT is used to ensure quality in manufactured products.</b></p> <p>Two marks for each of two descriptions of ICT used to check quality giving the ICT used and how or for what, for example: Sensors are used to check dimensions and the computer controls which are passed, sent for rework or rejected. Computer selects a random sample and runs electrical tests on them</p>	[4]

Question Number	Answer	Max Mark
11	<p><b>Explain why a prototype might not be made of the same material as the final product.</b></p> <p>Three marks for a clear explanation, (guidance: why, how, example). p</p> <p>Easier/faster to work(1) than...(1)</p> <p>Prototype for aesthetics/ergonomics only (1)(eg stereo lithography)</p> <p>Cheaper/lighter(1) than...(1)</p> <p>Easier to modify(1) than (1)</p> <p>Can be re-used (1). (such as (1) wax machining, expanded polystyrene cake form for decorating)</p>	[3]
12	<p><b>Tick the <u>two</u> personal qualities that are most desirable in a good team member.</b></p> <p><input type="checkbox"/> Healthy</p> <p><input type="checkbox"/> Clever</p> <p><input type="checkbox"/> Good communicator</p> <p><input type="checkbox"/> Independent worker</p> <p><input type="checkbox"/> Supportive</p> <p>One mark each for Good communicator and supportive</p>	[2]

Question Number	Answer	Max Mark
13(a)	<p><b>Explain the importance of allocating appropriate team roles and responsibilities when manufacturing a product.</b></p> <p>One mark for identified point plus 2<sup>nd</sup> mark for additional details/explanation.</p> <p>Ensuring all personnel have specific tasks within their capabilities/ work to strengths</p> <p>Changing/varying roles to avoid disenchantment</p> <ul style="list-style-type: none"> <li>• Ensuring responsibilities to get the job done</li> <li>• Avoiding personnel being under used/valued</li> <li>• If personnel don't have allocated roles duplication could happen</li> <li>• If personnel don't have allocated roles "gaps" could materialise</li> <li>• If role/responsibility too great unhappiness could ensue</li> <li>• Appropriate feeling of self worth</li> <li>• Appropriate feeling as valued member of team</li> <li>• Smoother production because personnel within their comfort zone.</li> </ul>	[2]
13(b)	<p><b>Explain the importance of setting and agreeing individual and team targets when manufacturing a product.</b></p> <p>One mark for identified point plus 2<sup>nd</sup> mark for additional details/explanation.</p> <p>Setting and agreeing individual and team targets:</p> <ul style="list-style-type: none"> <li>• Short term targets help identify delays early</li> <li>• Avoidance of lack of structure to task in hand.</li> <li>• Providing "clear" structure to enable quality control to be easily undertaken</li> <li>• Providing tangible focus for activity</li> <li>• Providing opportunity for individual to see where they fit into bigger picture</li> <li>• Bonding of team</li> <li>• Sharing responsibility for "the bigger picture"</li> </ul> <p>Ability to "switch" personnel because weaknesses can more easily be identified.</p>	[2]

Question Number	Answer	Max Mark																																																						
14	<p>The table shows a comparison of six components that could be used in a manufactured product.</p> <table><tr><th>Component</th><th>Ease of storage</th><th>Easy to use</th><th>Safe to use</th><th>Value for money</th><th>Readily available</th></tr><tr><td>A</td><td>8</td><td>1</td><td>9</td><td>9</td><td>9</td></tr><tr><td>B</td><td>5</td><td>6</td><td>5</td><td>5</td><td>4</td></tr><tr><td>C</td><td>8</td><td>2</td><td>1</td><td>2</td><td>3</td></tr><tr><td>D</td><td>2</td><td>9</td><td>1</td><td>2</td><td>2</td></tr><tr><td>E</td><td>3</td><td>8</td><td>6</td><td>3</td><td>5</td></tr><tr><td>F</td><td>9</td><td>5</td><td>3</td><td>9</td><td>2</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td colspan="4">10 = excellent 1 = very poor</td><td></td><td></td></tr></table> <p>(a) State which component is the most readily available.</p> <p>A</p> <p>14(b) Explain why component E would be the best choice for the workforce.</p> <p>1 mark for identifying both ease of use and safe to use as key features to consider. 1 for relevant comparison from: best total for 2, not worst for either, or better than average both.</p>	Component	Ease of storage	Easy to use	Safe to use	Value for money	Readily available	A	8	1	9	9	9	B	5	6	5	5	4	C	8	2	1	2	3	D	2	9	1	2	2	E	3	8	6	3	5	F	9	5	3	9	2							10 = excellent 1 = very poor						[1]   <
Component	Ease of storage	Easy to use	Safe to use	Value for money	Readily available																																																			
A	8	1	9	9	9																																																			
B	5	6	5	5	4																																																			
C	8	2	1	2	3																																																			
D	2	9	1	2	2																																																			
E	3	8	6	3	5																																																			
F	9	5	3	9	2																																																			
10 = excellent 1 = very poor																																																								

Question Number	Answer	Max Mark
16	<p><b>Please note that the instruction ‘discuss’ means that you should:</b>  <b>identify <u>three</u> relevant issues/points raised by the question;</b>  <b>explain why you consider <u>two</u> of these issues to be relevant;</b>  <b>use <u>one</u> specific example or piece of evidence to support your answer.</b></p> <p><b>Discuss the impact of modern technology on the local environment.</b></p> <p>Six marks for a discussion giving 3 relevant points, stating why 2 are relevant and giving an example. Or  For critical evaluation of the impact on the local environment</p> <p>Examples of points</p> <ul style="list-style-type: none"> <li>• Improved transport links and traffic controls</li> <li>• internet purchases means less travel effect on local roads</li> <li>• less emissions</li> <li>• less noise or more noise – needs explanation</li> <li>• better / more improved domestic products</li> <li>• improved social facilities</li> <li>• more people working from home</li> <li>• improved domestic and commercial communications</li> <li>• better local lighting.</li> <li>• reduce crime (CCTV), speed cameras, traffic lights</li> <li>• landfill sites</li> </ul> <p>Identification and expansion an any of the above. List is not exhaustive.</p>	[6]
	<b>Paper Total</b>	<b>[60]</b>



## Assessment Objectives Grid (includes QWC)

Question	AO1	AO2	AO3	Total
1	7			7
2	5			5
3		4		4
4	1			1
5	4			4
6	2			2
7	4			4
8		4		4
9		4		4
10		4		4
11			3	3
12		2		2
13(a)		2		2
13(b)		2		2
14(a)			1	1
14(b)			2	2
15			3	3
16			6	6
<b>Totals</b>	<b>23</b>	<b>22</b>	<b>15</b>	<b>60</b>